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CLAIMS:

1. A method for synthesizing severely sterically hindered amino ether alcohols, diaminopolyalkenyl ether, and mixtures thereof, by reacting a primary amino compound with a polyalkylene glycol at elevated temperature and pressure in the presence of a catalyst comprising a catalytically active reduced metal dispersed on a support, the dispersed metal containing catalyst being prepared by a process comprising introducing onto the support one or more organic complexes of one or more catalytic metals, decomposing the one or more organic metal complexes on the support and converting the one or more decomposed organic metal complexes into catalytically active reduced metal.
2. The method of claim 1 wherein the organic complex of one or more catalytic metals is introduced onto the support in the form of a mixture of an organic compound mixed with a compound or salt of one or more catalytic metals.
3. The method of claim 1 wherein the organic complex of one or more catalytic metals is introduced onto the support by treating the support with one or more organic compounds followed by treating the support containing the one or more organic compounds with one or more compounds or salts of one or more catalytic metals to form the one or more organic complexes of one or more catalytic metals.
4. The method of claim 1 wherein the organic complex of one or more catalytic metals is introduced onto the support by treating the support with one or more compounds or salts of one or more catalytic metals followed by treating the support containing the one or more compounds or salts of one or more catalytic metals with one or more organic compounds to form the one or more organic complexes of one or more catalytic metals.

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5. The method of claim 1 wherein the organic complex of one or more catalytic metals is introduced onto the support by treating the support simultaneously with one or more compounds or salts of one or more catalytic metals and one or more organic compounds to form the one or more organic complexes of one or more catalytic metals.

6. The method of claims 1, 2, 3, 4 and 5 wherein the decomposition is a partial decomposition.

7. The method of claims 1, 2, 3, 4 and 5 wherein the decomposition is a complete decomposition.

8. The method of claims 1, 2, 3, 4 and 5 wherein the support comprises one or more mesoporous materials.

9. The method of claims 1, 2, 3, 4 and 5 wherein the support comprises one or more ordered mesoporous materials.

10. The method of claims 1, 2, 3, 4 and 5 wherein the support comprises one or more mixed porosity materials.

11. The method of claims 1, 2, 3, 4 and 5 wherein the support comprises a support selected from the group consisting of one or more conventional amorphous materials, one or more crystalline support materials, and mixtures thereof.

12. The method of claims 1, 2, 3, 4 and 5 wherein the support comprises one or more mesoporous support materials combined with one or more mixed porosity support materials.

13. The method of claims 1, 2, 3, 4 and 5 wherein the support comprises one or more ordered mesoporous support materials combined with one or more mixed porosity support materials.

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14. The method of claims 1, 2, 3, 4 and 5 wherein the support comprises one or more mesoporous support materials combined with one or more additional materials selected from the group consisting of conventional amorphous materials crystalline materials and mixtures thereof.

15. The method of claims 1, 2, 3, 4 and 5 wherein the support comprises one or more ordered mesoporous support materials combined with one or more additional materials selected from the group consisting of conventional amorphous materials, crystalline materials, and mixtures thereof.

16. The method of claim 9 wherein the mesoporous support material comprises one or more materials designated as M41S.

17. The method of claim 16 wherein the mesoporous material is MCM-41.

18. The method of claim 11 wherein the support material comprises support materials selected from the group consisting of activated carbon, silicon carbide, aluminum oxide, silicon dioxide, titanium dioxide, zirconium dioxide, magnesium oxide, zinc oxide, and mixtures thereof.

19. The method of claim 18 wherein the support material is selected from the group consisting of aluminum oxide, silicon dioxide, and mixtures thereof.

20. The method of claims 1, 2, 3, 4 and 5 wherein the organic compound is selected from one or more organic nitrogen containing compounds.

21. The method of claim 20 wherein the one or more organic nitrogen containing compounds is selected from one or more amines.

22. The method of claim 21 wherein at least one of the amines is an aliphatic amine.

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23. The method of claim 22 wherein the aliphatic amine contains one or more hydroxyl groups.

24. The method of claim 6 wherein the decomposition of the organic complex is accomplished by calcination.

25. The method of claim 7 wherein the decomposition of the organic complex is accomplished by calcination.

26. The method of claim 6 wherein the decomposition of the organic complex is accomplished by pyrolysis.

27. The method of claim 7 wherein the decomposition of the organic complex is accomplished by pyrolysis.

28. The method of claims 1, 2, 3, 4 and 5 wherein the reduced metal content ranges from about 2.5 to about 80 wt% based on the whole reduced catalyst.

29. The method of claims 1, 2, 3, 4 and 5 wherein the catalytic metal comprises one or more metals of transition Group VIII.

30. The method of claim 29 wherein the catalytic metal additionally comprises at least one additional catalytic metal selected from the group consisting of transition Group 1B, Group IIA, and mixtures thereof.

31. The method of claim 30 wherein the catalytic metal is nickel.

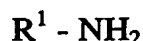
32. The method of claim 28 wherein the catalytic metal is nickel.

33. The method of claim 32 wherein the reduced metal content ranges from about 10 to about 65 wt% based on the whole reduced catalyst and the metal is nickel.

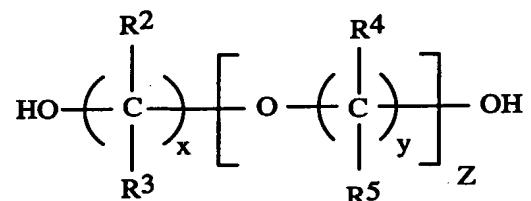
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34. The method of claims 1, 2, 3, 4 and 5 wherein the molar ratio of primary amine to glycol is in the range of about 10:1 to 0.5 to 1.

35. The method of claim 34 wherein the primary amine compound is of the general formula



wherein R^1 is selected from the group consisting of secondary and tertiary alkyl radicals having 3 to 8 carbon atoms, cycloalkyl radicals having 3 to 8 carbon atoms, and mixtures thereof, and the polyalkenyl glycol is of the general formula



wherein R^2 , R^3 , R^4 and R^5 are each independently selected from the group consisting of hydrogen, C1 to C4 alkyl radicals and C3 to C8 cycloalkyl radicals with the proviso that if the carbon atom of R^1 directly attached to the nitrogen atom is a secondary alkyl radical, at least one of R^2 and R^3 directly bonded to the carbon which is bonded to the hydroxyl group is an alkyl or cycloalkyl radical, x and y are each positive integers independently ranging from 2 to 4, z is from 1 to 10 and the ratio of alkyl substituted primary amine to glycol is less than 2:1 when z is greater than 1.

36. The method of claims 1, 2, 3, 4 and 5 the reaction of the primary amine and the glycol is conducted at a hydrogen pressure charged at room temperature of from about zero to about 300 psig, at a temperature of about 150°C to about 350°C, at a total reactor reaction pressure at operating temperature of about 50 to 1500 psig, for from about 0.5 to 24 hours.

37. The method of claim 36 wherein the hydrogen pressure charged at room temperature is about 20 to about 200 psig the temperature is about 160°C

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to about 300°C, the total reactor pressure at operating temperature is about 50 to 1000 psig and the reaction time of from about 1 to about 12 hours.

38. The method of claim 36 wherein the hydrogen pressure charged at room temperature is about 20 to about 150 psig the temperature is about 180°C to about 225°C, the total reactor reaction pressure at operating temperature is about 50 to 500 psig, reaction time is about 2 to about 8 hours and the primary amine to glycol ratio is about 2:1 to about 1:1.

39. The method of claim 36 wherein the primary amine is tertiary-butyl amine and the glycol is diethylene glycol.